

# STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROY COOPER GOVERNOR

JAMES H. TROGDON, III
SECRETARY

September 18, 2017

Addendum No. 4

RE: Contract # C204039 WBS # 34243.3.2 STATE FUNDED **Polk County (I-4729A)** 

I-26/US-74/NC-108 Interchange Modifications in the Town Of Columbus

#### September 19, 2017 Letting

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Structure plans:

Sheet No.	Revisions	
C-1	Note added to allow Precast option	

Please void existing Sheet C-1 in your plans and staple the revised Sheet C-1 thereto.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 4 Dated 09-18-2017".
Table of Contents	Revised to add "NOTE TO CONTRACTOR" special provision
G-31	Added special provision "NOTE TO CONTRACTOR"
ST-29 thru ST-36	Added special provision "OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 16+47.10 –RP F-"

Please void the Proposal Cover, Table of Contents and Page G-31 listed in your proposal and staple the revised pages thereto. Please staple New Page Nos. ST-29 thru ST-36 after Page No. ST-28.

The contract will be prepared accordingly.

Sincerely,

Ronald E. Davenport, Jr.

F81B6038A47A442...

Ronald. E. Davenport, Jr., PE State Contract Officer

RED/jjr Attachments

Mr. Lamar Sylvester, PE cc:

Mr. Brian Burch, PE

Mr. Chris Werner, PE

Mr. Ken Kennedy, PE

Mr. Jon Weathersby, PE

Ms. Jaci Kincaid

Project File (2)

Mr. Ray Arnold, PE

Ms. Theresa Canales, PE

Mr. Brian Hanks, PE

Mr. Mike Gwyn

Ms. Penny Higgins

Mr. Mitchell Dixon

Ms. Lori Strickland

# STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH, N.C.

#### **PROPOSAL**

# INCLUDES ADDENDUM No. 1 DATED 08-31-2017 INCLUDES ADDENDUM No. 2 DATED 09-14-2017 INCLUDES ADDENDUM No. 3 DATED 09-15-2017 INCLUDES ADDENDUM No. 4 DATED 09-18-2017

DATE AND TIME OF BID OPENING: SEPTEMBER 19, 2017 AT 2:00 PM

CONTRACT ID

C204039

**WBS** 

34243.3.2

FEDERAL-AID NO. STATE FUNDED

**COUNTY** 

**POLK** 

T.I.P. NO.

I-4729A

MILES

0.679

ROUTE NO.

I 26

LOCATION

I-26/US-74/NC-108 INTERCHANGE MODIFICATION IN THE TOWN

OF COLUMBUS.

TYPE OF WORK

GRADING, DRAINAGE, PAVING, SIGNING, AND STRUCTURES.

#### NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

# TABLE OF CONTENTS

# COVER SHEET PROPOSAL SHEET

## **PROJECT SPECIAL PROVISIONS**

CONTRACT TIME AND LIQUIDATED DAMAGES:	G-1
CONTRACT TIME AND LIQUIDATED DAMAGES:INTERMEDIATE CONTRACT TIME NUMBER 1, BONUS CLAUSE AND LIQUIDATED	TED
DAMAGES:	G-1
DAMAGES:INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:	G-2
INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES:	
PERMANENT VEGETATION ESTABLISHMENT:	
MAJOR CONTRACT ITEMS:	G-3
SPECIALTY ITEMS:	G-3
FUEL PRICE ADJUSTMENT:	G-4
SCHEDULE OF ESTIMATED COMPLETION PROGRESS:	G-4
MINORITY BUSINESS ENTERPRISE AND WOMEN BUSINESS ENTERPRISE:	G-4
SUBSURFACE INFORMATION:	G-18
LOCATING EXISTING UNDERGROUND UTILITIES:	
VALUE ENGINEERING PROPOSAL:	G-19
RESOURCE CONSERVATION AND ENV. SUSTAINABLE PRACTICES:	G-20
DOMESTIC STEEL:	G-21
PORTABLE CONCRETE BARRIER - (Partial Payments for Materials):	G-21
MAINTENANCE OF THE PROJECT:	G-21
TWELVE MONTH GUARANTEE:	
OUTSOURCING OUTSIDE THE USA:	G-22
IRAN DIVESTMENT ACT:	G-23
GIFTS FROM VENDORS AND CONTRACTORS:	G-23
LIABILITY INSURANCE:	
EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:	
PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:	G-29
EMPLOYMENT:	
STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:	
SUBLETTING OF CONTRACT:	G-31
NOTE TO CONTRACTOR:	G-31
ROADWAY	R-1
STANDARD SPECIAL PROVISIONS	
AVAILABILITY FUNDS – TERMINATION OF CONTRACTS	SSP-1
NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY	
ERRATA	SSP-5
PLANT AND PEST QUARANTINES	SSP-7
MINIMUM WAGES	
AWARD OF CONTRACT	
ON-THE-JOB TRAINING	
NCDENR NAME CHANGE	

# **UNIT PROJECT SPECIAL PROVISIONS**

GEOTECHNICAL	GT-1.2
SIGNING	
TRAFFIC CONTROL	
EROSION CONTROL	EC-1
STRUCTURE / CULVERTS	
PERMITS	P-1

## PROPOSAL ITEM SHEET

ITEM SHEET(S) (TAN SHEETS)

Page 1-65, Article 108-5 Character of Workmen, Methods, and Equipment, line 32, delete all of line 32, the first sentence of the second paragraph and the first word of the second sentence of the second paragraph.

#### **STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:**

(9-18-12)

SP1 G185

Revise the 2012 Standard Specifications as follows:

Replace all references to "State Highway Administrator" with "Chief Engineer".

#### **SUBLETTING OF CONTRACT:**

(11-18-2014)

108-6

SP1 G186

Revise the 2012 Standard Specifications as follows:

Page 1-66, Article 108-6 Subletting of Contract, line 37, add the following as the second sentence of the first paragraph:

All requests to sublet work shall be submitted within 30 days of the date of availability or prior to expiration of 20% of the contract time, whichever date is later, unless otherwise approved by the Engineer.

Page 1-67, Article 108-6 Subletting of Contract, line 7, add the following as the second sentence of the fourth paragraph:

Purchasing materials for subcontractors is not included in the percentage of work required to be performed by the Contractor. If the Contractor sublets items of work but elects to purchase material for the subcontractor, the value of the material purchased will be included in the total dollar amount considered to have been sublet.

#### **NOTE TO CONTRACTOR:**

In every instance where the notes for a wall indicates that the wall contractor shall verify that an architectural finish is or is not required, that wall **SHALL** receive a finish meeting the requirements of the project special provision entitled "SIMULATED STONE FORM LINER FINISH" found elsewhere in the contract documents.

No architectural finish will be required for the concrete barrier rail.

#### OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 16+47.10 –RP F-

(12-12-13)

#### 1.0 GENERAL

This Special Provision covers the design, fabrication and construction of precast reinforced concrete box culverts intended for the conveyance of storm water.

If the option is indicated on the plans, the submittal for a precast reinforced box culvert in lieu of a cast-in-place culvert is permitted. Design the precast culvert sections in accordance with ASTM C1577 or the current edition of the AASHTO LRFD Bridge Design Specifications. Rate all sizes of precast reinforced concrete box culverts in accordance with the current edition of the AASHTO Manual for Bridge Evaluation. Ensure the culvert rates for the AASHTO design loads and North Carolina's legal loads (see Section 2.0 for North Carolina's legal loads). Provide the size and number of barrels as indicated on the plans. Detail the culvert with cast-in-place wings walls and footings. Precast wing walls and footings will not be allowed. Provide a precast box culvert that meets the requirements of Section 1077 and any other applicable parts of the Standard Specifications.

The design and rating of the precast and cast-in-place members is the responsibility of the Contractor and is subject to review, comments and approval. Submit two sets of detailed plans and rating sheets for review. Include all details in the plans, including the size and spacing of the required reinforcement necessary to build the precast box and cast-in-place members. Have a North Carolina Registered Professional Engineer check and seal the plans, rating sheets and design calculations. After the plans, rating sheets and design calculations are reviewed and, if necessary, the corrections made, submit one set of plans and rating sheets on 22" x 34" sheets to become part of the contract plans.

If the span, rise and design earth cover for the precast reinforced concrete box culvert are identical to a previously approved submittal, the Contractor may request the previously approved design calculations and plans be considered as the submittal for review and approval. However, a set of plans and rating sheets will need to be submitted to become part of the contract plans.

## 2.0 NORTH CAROLINA'S LEGAL LOADS

Apply the following legal loads to all structures carrying interstate traffic:

	SINGLE VEHICLE(SV)			TRUCK TRACTOR SEMI-TRAILER(TTST
REF. #	SCHEMATIC		REF.#	SCHEMATIC
SH	5K 20K ○ ○ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	25K 12.5 TON	T4A	11K 7.5K 19K 19K
S3A	7.5K 19K 19K	45.5K 22.75 TON	T5B	56.5K 28.25 TON 6.5K 19K 19K 9.75K 9.75K 0 0 0 0 1 9'   4'   9'   4'
S3C	5K 19K 19K	43K 21.5 TON		64K 32 TON 11K 4K 19K 19K 9.5K 9.5K
S4A	11.5K 4K 19K 19K	53.5K 26.75 TON	Т6А	9' 4' 4' 9' 4' 72K 36 TON
S5A	11K 6K 19K 19K 6K	61K 30.5 TON	Т7А	9' 14' 19' 19' 9' 14' 14' 18' 80K  80K  40 TON
S6A	11K 6.66K 6.67K 19K 19K 6.67K	69K 34.5 TON	Т7В	11K 9.5K 9.5K 6K 6K 19K 19K  9' 4' 9' 4' 4' 4'  80K
S7A	9' 4' 4' 4' 4' 9' 34'	11K 80K 40 TON		40 TON
\$7B	11K 7K 7K 19K 19K 7K 7K  9' 4' 4' 4' 4' 4' 29'	77K 38.5 TON		

Apply the following legal loads to all structures carrying non-interstate traffic:

	SINGLE VEHICLE (SV)		TRUC	CK TRACTOR SEMI-TRAILER (TTST)
REF.#	SCHEMATIC		REF.#	SCHEMATIC
SNSH	5K 22K	27K 13.5 TON	TNAGRIT3	22K 22K 22K 66K 33 Ton
SNGARBS2	23.5K 16.5K	40K 20 TON	TNT4A	12.1K 12.05K 21K21K 9' 9' 4' 66.15K 33.075 TON
SNAGRIS2	22K 22K	44K 22 Ton	TNAGRIT4	22K 22K 21K 21K 9' 9' 4' 86K 43 TON
SNCOTTS3	4.5K 25K 25K	54.5K 27.25 TON	TNAGT5A	22K 21K 21K 13K 13K
SNAGGRS4	16K 15.85K 19K 19K	69.85K 34.925 TON	TNAGT5B	6K 21K 21K 21K 21K
SNS5A	12.1K 8.5K 21K 21K 8.5K	.71.1K 35.55 TON	TNT6A	12.1K 8.2K 21K 21K 10.45K 10.45K  9' 4' 4' 9' 4 83.2K 41.6 TON
SNS6A	12.1K 8.6K 8.6K 21K 21K 8.6K	79.9K 39.95 TON	TNT7A	4.1K 4K 21K 21K 11.3K 11.3K 11.3K 11.3K   9'
SNS7B	7.6K 8.6K 8.6K 21K 21K 8.6K 8.	6K ) 84K 42 TON	тит7в	4.1K 10.5K 10.5K 8.45K 8.45K 21K 21K  9' 4' 9' 4' 4' 4' 84K  42 TON

#### 3.0 PRECAST REINFORCED CONCRETE BOX SECTIONS

The precast reinforced concrete box culvert sections shall match the size and hydraulic opening indicated in the contract plans.

#### A. Design

- 1. Design Fill The design earth cover is reported on the plans as the elevation difference between the point of maximum fill and the bottom of the top slab.
- 2. Placement of Reinforcement Provide a 1 inch concrete cover over the reinforcement subject to the provisions of Section F. Extend the inside reinforcement into the tongue portion of the joint and the outside reinforcement into the groove portion of the joint. Detail the clear distance of the end wires so it is not less than 1/2 inch or more than 2 inches from the ends of the box section. Assemble reinforcement per the requirements of ASTM C1577 or the approved design. The exposure of the ends of the wires used to position the reinforcement is not a cause for rejection.
- 3. Laps and Spacing Use lap splices for the transverse reinforcement. Detail the transverse wires so that the center to center spacing is not less than 2 inches or more than 4 inches. Do not detail the longitudinal wires with a center to center spacing of more than 8 inches.

#### B. Joints

- 1. Produce the precast reinforced concrete box section with tongue and groove ends. Design and form these ends of the box section so, when the sections are laid together, they make a continuous line of box sections with a smooth interior free of appreciable irregularities in the flowline, all compatible with the permissible variations given in Section F. The internal joint formed at the tongue and groove ends of the precast units shall be sealed with either bitumen/butyl sealant or closed-cell neoprene material. The internal joint material shall be installed in accordance with the manufacturer's recommendations. The material shall be shown on the shop drawings when they are submitted for review.
- 2. Seal the external joint with an outside sealer wrap conforming to ASTM C877 that is at least 12 inches wide and covers the joint on both the sides and the top of the box section. Use ConWrap CS-212 from Concrete Sealants, Inc., EZ-Wrap from Press-Seal Gasket Corporation, Seal Wrap from Mar-Mac Manufacturing Co., Inc., Cadilloc External Pipe Joint from Cadilloc, or an approved equal for the outside sealer wrap. If the outside sealer wrap is not applied in a continuous strip along the entire joint, a 12 inch minimum lap of the outside sealer wrap is permitted. Before placing the outside sealer wrap, clean and prime the area receiving the outside sealer wrap in accordance with the sealer wrap manufacturer recommendations. The joint wrap manufacturer installation recommendations shall be included with shop drawings submitted for review. The external joint wrap shall be installed in pieces, as indicated on Figure 1 below:

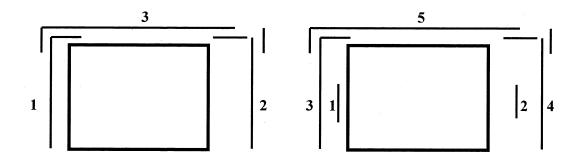


Figure 1

Cover the external joint sealer with a 3 foot strip of filter fabric conforming to Type 4 requirements in Section 1056 of the Standard Specifications.

Place multiple lines of a precast reinforced concrete box culvert such that the longitudinal joint between the sections has a minimum width of 3 inches. Fill the joint between multiple lines of precast box sections with Class A concrete. Use Class A concrete that meets the requirements listed in the Standard Specifications except that Field Compressive Strength Specimens are not required.

#### C. Manufacture

Manufacture precast reinforced concrete box culvert sections by either the wet cast method or dry cast method.

- 1. Mixture In addition to the requirements of Section 1077 of the Standard Specifications, do not proportion the mix with less than 564 lb/yd³ of portland cement.
- 2. Strength Concrete shall develop a minimum 28-day compressive strength of 5000 psi. Movement of the precast sections should be minimized during the initial curing period. Any damage caused by moving or handling during the initial curing phase will be grounds for rejection of that precast section.
- 3. Air Entrainment Air entrain the concrete in accordance with Section 1077 5(A) of the Standard Specifications. For dry cast manufacturing, air entrainment is not required.
- 4. Testing Test the concrete in accordance with the requirements of Section 1077 5(B).
- 5. Handling Handling devices or holes are permitted in each box section for the purpose of handling and placing. Submit details of handling devices or holes for approval and do not cast any concrete until approval is granted. Remove all

handling devices flush with concrete surfaces as directed. Fill holes in a neat and workmanlike manner with an approved non-metallic non-shrink grout, concrete, or hole plug.

#### D. Physical Requirements

Acceptability of precast culvert sections is based on concrete cylinders made and tested in accordance with ASTM C31 and ASTM C39.

#### E. Permissible Variations

- 1. Flatness All external surfaces shall be flat, true, and plumb. Irregularities, depressions, or high spots on all external surfaces shall not exceed 1/2 inch in 8 feet.
- 2. Internal Dimensions Produce sections so that the internal and haunch dimensions do not vary more than 1/4 inch from the plan dimensions.
- 3. Adjacent Sections Internal, external, and haunch dimensions for connecting sections shall not vary more than 1/2 inch.
- 4. Length of Tongue and Groove The minimum length of the tongue shall be 4 inches. The minimum length of the groove shall be 4 inches. The dimensions of the tongue and groove shall not vary more than 1/4 inch from the plan dimensions.
- 5. Slab and Wall Thickness Produce sections so that the slab and wall thickness are not less than that shown on the plans by more than 5% or 3/16 inch, whichever is greater. A thickness more than that required on the plans is not a cause for rejection.
- 6. Length of Opposite Surfaces Produce sections so that variations in laying lengths of two opposite surfaces of the box section meet the requirements of ASTM C1577, Section 11.3.
- 7. Length of Section Produce sections so that the underrun in length of a section is not more than 1/2 inch in any box section.
- 8. Position of Reinforcement Produce sections so that the maximum variation in the position of the reinforcement is ±3/8 inch for slab and wall thicknesses of 5 inches or less and ±1/2 inch for slab and wall thicknesses greater than 5 inches. Produce sections so that the concrete cover is never less than 5/8 inch as measured to the internal surface or the external surface. The preceding minimum cover limitations do not apply at the mating surfaces of the joint.
- 9. Area of Reinforcement Use the design steel shown on the plans for the steel reinforcement. Steel areas greater than those required are not cause for rejection. The permissible variation in diameter of any wire in finished fabric is prescribed for the wire before fabrication by either AASHTO M32 or M225.

#### F. Marking

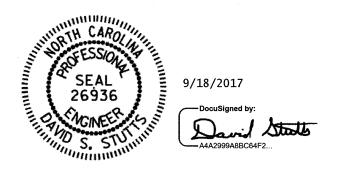
- 1. Each section shall be match-marked in order of intended installation as indicated on the approved shop drawings. Ensure that pieces fit together neatly and in a workmanlike manner. In order to ensure a good, neat field fit, the Department will verify assembly of the first five adjacent sections or 20% of the total culvert length, whichever is greater, at the producer's facility and match-mark the pieces. This will require that a minimum of three adjacent sections of the culvert be fitted at the production yard at a time and then match-marked. Once three sections have been match-marked, the first section may be removed for shipment and a fourth section set for marking. Continue in a progressive manner until all sections have been properly match-marked. The producer shall document the GO-NO-GO dimensional measurements of each box culvert section produced through the post-pour inspection process.
- 2. Clearly mark each section of the box culvert in accordance with ASTM C1577, Section 15. The information requirements of Section 15.1 shall be clearly marked on the inner surface of each section.

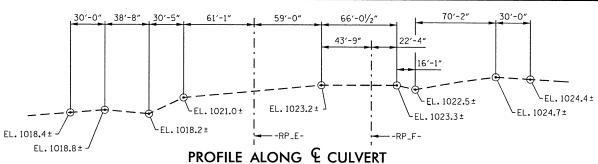
#### G. Construction

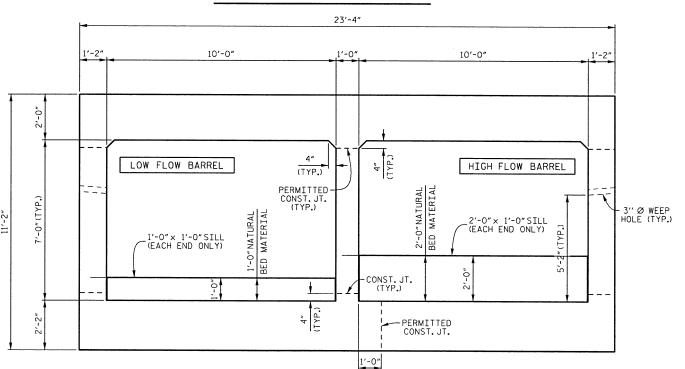
- 1. Pre-installation Meeting A pre-installation meeting is required prior to installation. Representatives from the Contractor, the precast box manufacturer, and the Department should attend this meeting. The precast box manufacturer representative shall be on site during installation.
- 2. Foundation Foundation for precast box culvert shall meet the requirements of Section 414 of the Standard Specifications. In addition, Type VI foundation material shall be encapsulated in filter fabric conforming to Type 4 requirements in Section 1056 of the Standard Specifications. The filter fabric shall be placed perpendicular to the culvert barrel. Provide sufficient overhang beyond the excavation to allow a minimum lap of 3 feet when the foundation material is placed and fabric wrapped on top. Perpendicular sections of fabric shall be continuous. A minimum lap of 2 feet shall be provided between sections of fabric.
- 3. Installation Sections shall be placed at the beginning of the outlet end of the culvert with the groove end being laid upgrade. Tongue sections shall be laid into the groove sections. Positive means shall be provided to pull each section firmly into the previously placed section so that the joints are tightly homed. Use a "comealong", box pullers or other approved methods to create a positive means of joining box sections. Construction equipment shall not have direct contact with the box section. The load of the box shall be suspended by lifting device during joining procedure.
- 4. Backfill Complete backfill in accordance with Section 414 of the Standard Specifications.

#### 4.0 BASIS OF PAYMENT

Any additional cost of redesigning will be paid for by the Contractor if Precast Reinforced Concrete Culvert is used in lieu of the cast-in-place culvert shown on the plans. Except for Foundation Conditioning Material and Culvert Excavation, payment for the Precast Box Culvert will be a lump sum amount equal to the payment that would be allowed for construction of a Cast-in-Place Box Culvert. Plan quantities and unit bid prices will be used to compute the lump sum amount. Such price and payment will be full compensation for all work covered by this Special Provision, the plans and applicable parts of the Standard Specifications and will include, but not be limited to, furnishing all labor, materials (including all filter fabric), equipment and other incidentals necessary to complete this work. Such price and payment will also be full compensation for concrete, reinforcing steel, labor, equipment and all other related materials necessary for the completion of the barrel section, and the construction of the headwalls, leveling pad, end curtain walls, wings and wing footings.







TYPICAL BARREL SECTION

(RIGHT ANGLE SECTION, LOOKING DOWNSTREAM)

#### NOTE

ASSUMED LIVE LOAD ------HL93 OR ALTERNATE LOADING.

DESIGN FILL----- 40.0 FEET.

FOR OTHER DESIGN DATA AND NOTES, SEE "STANDARD NOTES"

 $3\rlap{\,{''}}\varnothing$  WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.

2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT, FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEFT

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FEET. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE FNGINEFR.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR

NO SEPARATE PAYMENT WILL BE MADE FOR THE 30 LB.ROOFING FELT. THE 30 LB.ROOFING FELT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE "CLASS A CONCRETE".

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

DOWELS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL IN THE FLOOR SLAB.

ALL REINFORCING STEEL SHALL BE GRADE 60.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION.EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

FOR HYDRAULIC AND DRAINAGE INFORMATION, SEE ROADWAY AND {
DRAINAGE PLANS.

UNDERCUT OF SOFT FOUNDATION SOILS UNDER THE CULVERT MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER'S OFFICE. THE LIMITS OF THIS UNDERCUT EXCAVATION SHALL BE AT LEAST THE LIMITS OF THE BOX CULVERT INCLUDING THE WINGS. NO SEPARATE PAYMENT WILL BE MADE FOR ANY TEMPORAR SHEETING, UNDERCUT, OR UNSUITABLE MATERIAL REPLACEMENT AS REQUIRED TO CONSTRUCT THE PROPOSED CULVERT. PAYMENT IS INCLUDED IN THE LUMP SUM PRICE FOR CULVERT EXCAVATION.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS CULVERT SHALL BE SUBMITTED. SEE SHEET C-6.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

### SEE SECTION 414 OF STANDARD SPECIFICATIONS FOR CULVERT FXCAVATION AND BACKET! ING.

EXCAVATE 1 FOOT BELOW CULVERT AND FOOTING, AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH ARTICLE 414-4 OF THE STANDARD SPECIFICATIONS.

CONSTRUCT THE REINFORCED CONCRETE BOX CULVERT AT STA. 20+89.16 -RP\_E- WITH 8"OF CAMBER AND STA. 16+47.2 -RP\_F-WITH 6"OF CAMBER TO ACCOUNT FOR ANTICIPATED SETTLEMENT.

BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

DEWATERING MAY BE REQUIRED DURING CONSTRUCTION.

ISOLATED AREAS OF WITH WEAK SOILS MAY REQUIRE EXCAVATION MORE THAN 1 FOOT BELOW THE BOTTOM OF THE CULVERT AND

SUBGRADE NEEDS TO BE VERIFIED BY THE ENGINEER OR THERE REPRESENTATIVE PROP TO PLACING FOUNDATION CONDITIONING MATERIAL.

USE TYPE 2 GEOTEXTILE UNDER RIP-RAP FOR BANK STABILIZATION MEETING SECTION 1056 OF THE NC DOT STANDARD SPECIFICATIONS.

FOR CULVERT DIVERSION DETAILS AND PAY ITEMS, SEE EROSION CONTROL PLANS

NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM OR FLOOD-PLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARRELS. IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

SILLS ARE TO BE 1.0 FT WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW CHANNEL OF STREAM (THALWEG).

I HEREBY CERTIFY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

.029979

9/18/2017

A Section Storms

DO NOT SET ELEVATION OF HIGH SILLS ABOVE BANK FULL.

COIR FIBER MATTING SHALL BE SECURED ON THE BENCHES AND PLACED BEHIND RIP RAP TO PREVENT WASHOUT OF SEDIMENT THROUGH GAPS.

PRECAST REINFORCED BOX CULVER OPTION WILL BE ALLOWED.
SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT ALL PRECAST
SEGMENTS ARE PROPERLY MATCH CAST, DRY FIT AND MATCH MARKED
IN ORDER TO ACCOMMODATE THE REQUIRED CAMBERS AS NOTED.

IF A PRECAST BOX CULVERT IS USED, THE CONTRACTOR MUST SUBMIT A PRECAST CULVERT DESIGN AND OBTAIN APPROVAL PRIOR TO CONSTRUCTION. PRECAST UNITS SHALL BE ABLE TO DEFLECT AND ROTATE WITHOUT CAUSING DAMAGE TO JOINTS BETWEEN ABUTTING SEGMENTS AS STRUCTURAL FILL IS PLACED ON TOP OF IT AT ANY PHASE OF CONSTRUCTION. THE SUBMITTAL SHALL INCLUDE PHASING OF WORK AND THE ANTICIPATED DEFLECTION OF THE CULVERT, ALONG THE CULVERT PROFILE, AT EACH PHASE OF THE BACKFILLING PROCESS. DETAILS FOR THE WINGWALL ATTACHMENTS SHALL BE INCLUDED. SUBMISSION OF STRUCTURAL DETAILS DOES NOT ASSURE PRECAST CULVERT WILL BE APPROVED FOR THE PROJECT. PRECAST CULVERT SHALL BE DESIGNED AND SUBMITTED FOR REVIEW IN ACCORDANCE WITH THE "PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 16+47.10 -RP\_F-"SPECIAL PROVISION.

# TOTAL STRUCTURE QUANTITIES

FOUNDATION CONDITIONING MATERIAL BOX CULVERT	656 TONS
CULVERT EXCAVATION	LUMP SUM
CLASS A CONCRETE	1613.3 CU. YDS.
REINFORCING STEEL	153,914 LBS.

1 REVISED NOTES.

 DRAWN BY :
 T. DETMERS
 DATE : 7-17

 CHECKED BY :
 D. WHONG
 DATE : 7-17

 DESIGN ENGINEER :
 S. T. PHAN
 DATE : 7-17

PLANS PREPARED BY:

PARSONS

5540 Centerview Drive, Suite 217
Rolleigh, NC. 7050-63386
NC UCENSE No. F-0246
FOR NORTH CAGUINAD EPERAFURT OF TRANSPORTATION

PROJECT NO. \_\_\_\_I-4729A

\_\_\_\_\_\_POLK \_\_\_\_ COUNTY STATION: \_\_\_16 + 47.10 \_RP\_F-\_\_

SHEET 1 OF 6 BRIDGE No. 740231

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION RALEIGH

DOUBLE 10 FT. X 7 FT. CONCRETE BOX CULVERT 124° 30′ 00″ SKEW

 REVISIONS
 SHEET No.

 No.
 BY:
 DATE:
 No.
 BY:
 DATE:
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